

REMARKS/ARGUMENTS

This response acknowledges the previous restriction requirement and hereby cancels Claims 18-25. Claims 1-17 were previously under examination and the outstanding Office Action rejects claims 1-5, 7-13, and 15-17 on various grounds and over three applied references (*Ohuchi* (USPN 6,590,287 hereinafter "*Ohuchi*"); (*Venkateswaran* (USPN 6,780,673 hereinafter "*Venkateswaran*"); and *Su et al.* (US Pat. Appl. Publ. No. 2002/0182773 hereinafter "*Su*").

Claim 1 is amended herein. **New Claim 26 is added.** **Claims 1-17 and 26 are now pending** in this application. Entry of these amendments is respectfully requested. Reconsideration of the Application based on the Amendments and Remarks contained herein is respectfully requested.

Rejections Under 35 U.S.C. § 112

Claims 8, 9, 16, & 17 have been rejected under 35 U.S.C. § 112, 2nd paragraph as being indefinite.

The applicants wish to clarify what is meant by the claim language "a conductive element having at least a portion oriented toward said geometric center". Reference is made to Figures 3, 4A, 4B, and paragraphs [0018], [0019], and [0020]. The "conductive element" refers to, for example, 410 or 420 of Figs. 3 and 4A. At least of a portion of those conductive elements 410, 420 extend toward the "geometric center" 430 as shown, for example, in Fig. 4B. The idea being that the conductive elements extend toward the middle of the substrate (as illustrated and claimed) and away from the edge of the substrate. Applicants respectfully submit that the existing language is clear and is believed to articulate the principles of the invention in a manner consistent with 35 U.S.C. § 112. A further claim (Claim 26) has been added which approaches this limitation in a different manner. The Applicants invite the Examiner to telephonically contact the prosecuting attorney to discuss any clarifying changes to the claim language that are believed necessary in view of the above discussion.

Accordingly, the applicants respectfully submit that the claims as drafted overcome this ground of rejection and as a consequence respectfully request that this ground of rejection be withdrawn.

10/729,389
NSC1 P285/P05744

Rejection Under 35 U.S.C. § 102**♦Ohuchi**

Claims 1-3 and 10-12 have been rejected under 35 U.S.C. § 102(b) as being anticipated by *Ohuchi*.

The Applicants respectfully traverse this rejection on the following grounds. Claim 1 is amended to recite “the first and second support structures each **arranged beneath and** configured to support an electrical connector to be formed over the first and second support structures on the substrate”. It is pointed out that in the cited art, the second support structure (solder layer 11 of *Ohuchi*) does not support the electrical connector (bump 5 of *Ohuchi*). This is more than functional language. The idea of supporting the electrical connection describes the structural characteristics of the interaction between electrical connector (250 Fig. 2A of the present invention) and the second support structure (360 Fig. 2A of the present invention). The applicants have attempted to make this point more clear by adding language that recites “structures each **arranged beneath and** configured to support an electrical connector”. It is important to note that the *Ohuchi* solder resist layer 11 is off to the side rather than under solder ball. Moreover, it cannot support the solder ball due to the offset displacement of the layer 11.

Thus, the problem solved by the present invention (i.e., spreading of force over a larger area while dissipating parasitic capacitance) is not addressed with the *Ohuchi* invention. Accordingly, because *Ohuchi* fails to teach a second structure arranged beneath and configured to support the electrical connector *Ohuchi* fails to teach all claim elements of Claim 1. Accordingly, *Ohuchi* does not establish a *prima facie* case for anticipation. Therefore, the applicants respectfully submit that the amendment to Claim 1 overcomes the cited art. Thus, applicants request that this ground of rejection be withdrawn as to Claim 1 and the claims depending therefrom (Claims 2 & 3).

This point is made even more clearly in Claims 10-12, wherein it is recited that a second pad “underlying a solder bump interconnect and overlaying electronic circuitry”. As explained above, the solder layer 11 of *Ohuchi* does not underlie the solder bump 5 of *Ohuchi*. The *Ohuchi* solder resist layer 11 is offset to the side rather than underlying solder ball. Moreover, it cannot “support” the solder ball due to the offset displacement of the layer 11. Thus, for two major structural reasons the claimed invention is distinct from the cited art.

10/729,389

NSC1 P285/P05744

Accordingly, because *Ohuchi* fails to teach a second structure arranged beneath and configured to support the electrical connector, *Ohuchi* fails to teach all claim elements of Claim 10. Accordingly, *Ohuchi* does not establish a *prima facie* case for anticipation. Therefore, the applicants respectfully submit that as worded Claim 10 overcomes the cited art. Thus, applicants request that this ground of rejection be withdrawn as to Claim 10. Additionally, for at least the same reasons, the applicants request that this ground of rejection be withdrawn as to the claims depending therefrom (Claims 11 & 12).

♦**Venkateswaran**

Claims 1-5, 7, 10-13, and 15 have been rejected under 35 U.S.C. § 102(e) as being anticipated by *Venkateswaran*.

The Applicants respectfully traverse this rejection on the following grounds.

Venkateswaran suffers from much the same shortcoming as *Ohuchi*. In the case of Claim 1, the “second support” 62 of *Venkateswaran* is not arranged to support the “electrical connectors” 50. Accordingly, *Venkateswaran* does not teach “the first and second pads underlying a solder bump interconnect ... [and] the second pad ... to support the solder bump interconnect” as recited in Claim 1.

Thus, as was the case with *Ohuchi*, the problem solved by the present invention (i.e., spreading of force over a larger area while dissipating parasitic capacitance) is not addressed with the *Venkateswaran* invention. Nothing in the cited portions of *Venkateswaran* is offered to show or suggest a teaching of a second structure arranged beneath and configured to support the electrical connector. Absent such a teaching, *Venkateswaran* fails to teach a second structure arranged beneath and configured to support the electrical connector and therefore fails to teach all claim elements of Claim 1. Accordingly, *Venkateswaran* does not establish a *prima facie* case for anticipation. Therefore, the applicants respectfully submit that the amendment to Claim 1 overcomes the cited art. Thus, applicants request that this ground of rejection be withdrawn as to Claim 1 and the claims depending therefrom (Claims 2-5, & 7).

As before, the same point is made even more clearly in Claims 10-13 and 15 wherein it is recited that a second pad “the first and second pads underlying a solder bump interconnect ... [and] the second pad ... to support the solder bump interconnect”. As explained above, the “plate

10/729,389

NSC1 P285/P05744

structure 62" of *Venkateswaran* do not underlie the "solder balls 50" of *Venkateswaran*. The openings in the *Venkateswaran* "plate structure 62" are too wide to support the solder balls and are offset to the side rather than underlying solder ball (see, *Venkateswaran* e.g., Fig. 14). Accordingly, it is not possible for the plate 62 of *Venkateswaran* to "support" the solder balls 50. Thus, for the same two major structural reasons as explained with respect to *Ohuchi*, *Venkateswaran* also fails to establish a prima facie case of anticipation of Claim 10. Thus, the claimed invention is distinct from the cited art.

Moreover, because *Venkateswaran* fails to teach all claim elements of Claim 10 the applicants request that this ground of rejection be withdrawn as to Claim 10. Additionally, for at least the same reasons, the applicants request that this ground of rejection be withdrawn as to the claims depending therefrom (Claims 11-13 & 15).

Rejections Under 35 U.S.C. § 103

Claims 5 and 13 stand rejected under 35 U. S. C. §§ 103(a) as being unpatentable over a combination of *Ohuchi* and *Su*.

Applicants respectfully traverse this rejection as well. Applicants have already pointed out the deficiencies of the *Ohuchi* reference as to base **Claim 1 (as amended) and Claim 10**. Nothing additional provided by the added cited portions of *Su* teach or suggest the recited limitation "the first and second support structures each arranged beneath and configured to support an electrical connector to be formed over the first and second support structures on the substrate". As explained above, with respect to *Ohuchi*, absent this teaching the cited art fails to establish a prima facie case of obviousness as to the rejected **Claim 1** (and therefore dependent **Claim 5**). Therefore, the applicants respectfully submit that the cited references are insufficient to establish that the claimed invention is obvious. Accordingly, applicants respectfully request that the pending ground of rejection of Claim 5 be withdrawn.

As for **Claim 13**, the applicants have already pointed out the deficiencies of the *Ohuchi* reference as to base **Claim 10**. Nothing additional provided by the added cited portions of *Su* teach or suggest the recited limitation "the first and second pads underlying a solder bump interconnect ... [and] the second pad ... to support the solder bump interconnect". As explained above, with respect to *Ohuchi*, absent this teaching the cited art fails to establish a prima facie case of obviousness as to the rejected **Claim 10** (and therefore dependent **Claim 13**). Therefore, the applicants respectfully

10/729,389
NSC1 P285/P05744

submit that the cited references are insufficient to establish that the claimed invention is obvious. Accordingly, applicants respectfully request that the pending ground of rejection of Claim 13 be withdrawn.

Allowable Subject Matter:

The Applicants thank the Examiner for the indication of allowable subject matter as the Claims 6 and 14 (which would be allowable if rewritten). The applicants respectfully submit that the underlying base claims are allowable over the current art of record. Accordingly, the applicants respectfully submit that due to the allowability of the base claims, there is no need to amend the objected to dependent Claims. However, the applicants are open to the idea of amending the objectionable claims at some future time if it should become necessary. Accordingly, applicants respectfully request that the pending ground of rejection of these claims (6 and 14) be withdrawn.

New Claims:

Claim 26 has been added to specifically clarify certain patentable subject matter. In particular, Claim 26 is a rewording of allowable Claim 6 incorporating the limitations of base Claim 1. Accordingly, this claim is in all essential respects, identical to allowable Claim 6. Accordingly, the applicants respectfully request allowance of Claim 26.

Conclusion:

In view of the foregoing amendments and remarks, it is respectfully submitted that the claimed invention as presently presented is patentable over the art of record and that this case is now in condition for allowance.

Accordingly, the applicants request withdrawal of all pending rejections and request reconsideration of the pending application and prompt passage to issuance. As an aside, the applicants clarify that any lack of response to any of the issues raised by the Examiner is not an admission by the applicant as to the accuracy of the Examiner's assertions with respect to such issues. Accordingly, applicant's specifically reserve the right to respond to such issues at a later time during the prosecution of the present application, should such a need arise.

10/729,389
NSC1 P285/P05744

As always, the Examiner is cordially invited to telephone the applicants representative to discuss any matters pertaining to this case. Should the Examiner wish to contact the undersigned for any reason, the telephone numbers set out below can be used.

Additionally, if any fees are due in connection with the filing of this Amendment, the Commissioner is authorized to deduct such fees from the undersigned's Deposit Account No. 50-0388 (Order No. NSC1 P285).

Respectfully submitted,

BEYER WEAVER & THOMAS, LLP



Francis T. Kalinski II
Registration No. 44,177

P.O. Box 70250
Oakland, CA 94612-0250
Telephone: (831) 642-9609
Alt. Tel.: (650) 961-8300

10/729,389
NSC1 P285/P05744